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Editor - Captain F. W. Farrar, MC, USN

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TABLE OF CONTENTS

Circular Letters:

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Incarcerated and Strangulated Inguinal Hernia: In large charity hospitals, an incarcerated or strangulated hernia constitutes one of the most important surgical emergencies. For many years, the practice at the Cook County Hospital has been to attempt to transform incarcerated or strangulated inguinal hernias from the status of a surgical emergency to a status permitting a later elective procedure. This study was made for the purpose of evaluating the risk and dangers of the manual reduction of incarcerated inguinal hernias when nonoperative and operative types of treatment are used.

During the years from 1940 to 1947, inclusive, 500 patients with incarcerated or strangulated inguinal hernia were admitted to the Cook County Hospital. Incarcerated hernias are considered irreducible hernias with pain or obstructive symptoms. Symptomless irreducible hernias are not included in this study. Strangulated hernias are incarcerated hernias with impairment of the blood supply to the contained viscera by constriction at the neck of the sac; the diagnosis of strangulation usually is made with complete certainty only at operation. Prompt relief of the vascular obstruction is necessary to prevent necrosis or gangrene. Many clinically diagnosed strangulated hernias are found at operation to be incarcerated hernias with unimpaired circulation.

All uncomplicated incarcerated or strangulated hernias were subjected to attempts at manual reduction prior to operation. Manual reduction is not attempted if the hernia is exquisitely tender or inflamed. The hernias were divided into three series: (1) those reduced without operation, (2) those requiring operation, and (3) those receiving no treatment because of the moribund condition of the patient or his refusal of operation.

The routine procedure which is the result of the observations and experiences of Dr. Roger T. Vaughan consists in placing the patient in a steep Trendelenburg position - vertical hanging in children - with gentle manipulation and diffuse pressure on the hernial mass. Successful reduction is evidenced by disappearance of the hernia and the absence of a mass in the lower quadrant of the abdomen. This is determined by palpating with one hand on the abdomen and with a finger of the other hand in the internal ring. Immediate relief of pain, return of bowel sounds toward normal, and disappearance of nausea and vomiting occur. After a day or two of hospitalization, elective herniotomy is performed, provided that oil and stool, but no blood, appear via the rectum.

The danger of reducing gangrenous bowel into the peritoneal cavity has been one of the chief objections to manual reduction. Such a hernia is usually too tender to tolerate manual pressure unless the patient is under the influence of a narcotic, and narcotics should never be used to facilitate taxis. Furthermore, gangrenous and inflamed bowel is adherent to the sac and its neck by an inflammatory exudate which prevents reduction save by excessive violence. Unrecognized reduction en masse is a more real danger; the continuance of the illeus and the presence of a palpable firm sausage-shaped mass inside the internal ring is evidence of this complication and should be sought for carefully.

Emergency surgical treatment was employed in those cases in which manual reduction proved unsuccessful or was contraindicated. Various surgical procedures were used, according to the judgment of the surgeon. In the majority of cases the hernia was reduced and repaired; in others a gangrenous bowel was resected or exteriorized. Primary resection with anastomosis is considered the procedure of choice.

The viability of the bowel at operation is occasionally difficult to determine, and it is extremely important in borderline cases that several of the many tests which have been recommended be used. Resection of bowel which is capable of recovery increases the surgical risk; yet replacement of gangrenous bowel is fatal. Some surgeons have advised exteriorization of the bowel when the viability is questionable and replacing it within the abdomen at a later date if it proves to be viable. However, it is strongly recommended that a decision be made at the time of operation either to resect or to replace the bowel.

Table 1 shows the results of treatment in these 500 cases.

TABLE 1.—*Results of Treatment in 500 Consecutive Cases of Incarcerated and Strangulated Inguinal Hernias*

	Number of Cases	Number of Deaths	Mortality Rate, Percentage
Nonsurgical Treatment	298	7	2.4
Hernia reduced by			
Hanging posture only	34	0	0.0
Manipulation and posture	264	5	1.8
Surgical complication following reductions	10	2*	20.0
Surgical Treatment; Failure of Manual Reduction or Complication of Manipulations	205	33	16.1
No strangulation noted			
Operative reduction and simple repair	52	2	3.84
Strangulation diagnosed	148	31	20.9
Contents viable	123	13†	10.4
Contents gangrenous	22	18	82.0
Resection and primary anastomosis	18	13	72.2
Exteriorization of bowel	4	4	100.0
Drainage of inguinal abscess secondary to gangrenous bowel	3	1	33.3
Exploration after manual reduction for persistent symptoms	3	0	0.0
No Treatment. Patient admitted in shock, was dying or refused operation	7	6	85.7

* Both deaths followed operation.
† Included 2 cases of replacement of gangrenous bowel and 1 of bladder (surgical error).

Reduction of the hernia without operation was accomplished in 298 patients, or 60 percent of the series. There were 7 hospital deaths, a mortality rate of 2.4 percent. One death was the direct result of manual reduction with the patient under morphine anesthesia; another was an operative death after hernial incarceration recurred. The other hospital deaths in this group were due to cardiovascular disease. In 10 of these cases of reduced hernia subsequent emergency operation was required. Four of the ten hernias recurred and became irreducible, and immediate operations were performed. Three of these hernias were reduced operatively and repaired. In the fourth case there was questionable viability of the bowel, and the loop was exteriorized; the patient died after the loop of bowel was called viable and was replaced in the abdomen. Four patients of the 10 continued to have obstructive symptoms after the hernia was reduced, and exploration was necessary. No cause for the symptoms could be observed

in 1 case; in 1 case an adherent loop of bowel was freed from the sac, and in the third case there was diverticulitis of the sigmoid. These 3 patients recovered. The fourth patient continued to have tenderness, pain, and slight fever, but flatus and oil were passed freely; the significance of a palpable sausage-shaped mass at the internal ring was not recognized immediately, and at operation a hernia reduced en masse, with a gangrenous bowel, was seen. This patient died. In two others of these 10 cases reductions en masse occurred; in one the condition was recognized at the time of reduction because of the palpable tumor at the internal ring, and in the other there was a preoperative diagnosis of appendicitis because of recurrent abdominal symptoms. Both of these 2 patients recovered after operation.

Emergency operation was performed on 195 patients, or 40 percent of the series, because the hernias proved to be irreducible, and also on the 10 patients (mentioned above) who had complications with manual reduction. There were 33 deaths in these 205 patients, a mortality rate of 16.1 percent. Surgical reduction with repair was done on 175 patients; in 123 of these, the hernia was strangulated, but the bowel was considered viable and replaced within the abdomen. There were 13 deaths in this group of 175 patients; 3 of these deaths resulted from replacement of nonviable organs (grangrenous bowel in 2 cases, and in the third there was focal necrosis of strangulated bladder wall - not recognized at operation - with retroperitoneal extravasation of urine, confirmed by autopsy). At operation in 22 cases there was a gangrenous small bowel; resection with anastomosis was done in 18 cases, with 13 deaths, and exteriorization of the bowel was done in 4 cases, with 4 deaths. Thus, the mortality rate for the 22 cases of gangrene with 17 deaths was 77 percent. Incision and drainage of inguinal abscesses secondary to gangrenous bowel was necessary for 3 patients, of whom 1 died.

As shown in tables 2 and 3, the duration of the incarceration of the hernia and the age of the patient bore a relationship to the mortality rate. No deaths

TABLE 2.—*Relation of Duration of Incarceration to Mortality Rate*

	Nonsurgical, Reduction		Surgical Treatment			
			No Strangulation		Strangulation	
Duration	Number of Cases	Mortality Rate, Percentage	Number of Cases	Mortality Rate, Percentage	Number of Cases	Mortality Rate, Percentage
1 to 6 hr.	91	0.0	8	0.0	14	0.0
6 to 24 hr.	108	1.8	24	0.0	44	11.3
24 to 72 hr.	35	2.8	15	6.6	30	20.0
3 to 6 days	32	6.2	17	5.8	31	38.7
7 to 14 days	8	0.0	2	0.0	16	31.2
14 to 21 days	2	0.0	0	0.0	0	0.0

TABLE 3.—*Relation of Age to Mortality Rate*

Age, years	1-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Number of cases	76	54	85	79	97	73	29	3
Number of deaths	0	1	3	8	14	16	2	0
Mortality rate (percentage)	0	1.9	3.5	10.1	14.4	21.9	6.9	0

occurred in 113 cases, including 22 surgically treated patients with incarceration of less than 6 hours in duration. Only in the groups of cases with actual strangulation confirmed by operation was the mortality rate high. In these cases with strangulation the mortality rate increased from 11.3 percent with incarceration of from 6 to 24 hours' duration to a rate of 38.7 percent with incarceration of from 3 to 6 days. The rate also increased with advancing age and was highest in the eighth decade.

Table 4 shows the causes of death. Seven patients were admitted with a systolic blood pressure of 90 mm. or less, and all died. The highest number of

TABLE 4.—*Causes of Death in 500 Consecutive Cases of Incarcerated and Strangulated Inguinal Hernia*

		Number
Shock		14
No operation or reduction, patient admitted in shock	5	
Postoperative	8	
Anesthetic (spinal)	1	
Cardiovascular Disease		12
Nonsurgical, manual reduction	4	
Postoperative	8	
Infection		8
Pneumonia	3	
Subphrenic abscess	1	
Peritonitis	4	
Exhaustion after enterostomy		1
Cause not determined (all deaths postoperative)		9
Total		44

deaths occurred in the groups with the longest duration of incarceration and in the older age groups. Cardiovascular disease ranked second, as also would be expected, since 56 percent of the patients were over 50 years of age and many were in poor general condition. Almost all the deaths occurred in patients over 50 years of age. In the group under 30 years there were no deaths, only one death under 40 years, and only 4 under 50 years of age. It is considered significant that only 4 deaths were attributed to peritonitis. This may be accounted for by the use of chemotherapeutic agents and, more recently, the antibiotics.

Unsuccessful attempts at manual reduction in the 205 cases in which 33 operative deaths occurred may have contributed to the higher mortality rate in this series as compared with the mortality rates reported by some other surgeons. In this series, the mortality rate for the surgically treated patients at least was not increased greatly by preoperative taxis. However, mortality rates in large charity hospitals may be higher because disease is more advanced or neglected before admission than in private practice; also, mortality increases with age, as shown in table 3, and 56 percent of these patients were more than 50 years old.

Exteriorization of the involved bowel has been recommended for patients who are exceptionally poor surgical risks or when the viability of the bowel is questionable. In this series, 4 patients had loops of bowel exteriorized and all died. Three of these patients were poor surgical risks, and this accounted for the choice of operative procedure.

Resection and primary anastomosis for gangrenous small bowel has given better results than the exteriorization procedure, although the mortality rate for resections in this series was 72 percent. Jarboe and Pratt had a mortality rate of 92.5 percent for sixteen primary resections, Frankau 47 percent for thirty resections, and Hay 100 percent for six resections. The time required for resection and anastomosis is not long, and in present day surgical practice, with the availability of whole blood and antibiotics, primary resection is the best treatment for gangrenous bowel.

Spinal anesthesia was employed by choice in the majority of cases. Inhalation anesthesia was used in 22 percent of the cases and local infiltration with procaine in 11 percent. In the latter group the patients were extremely poor surgical risks.

The over-all mortality rate in these 500 cases was 8.8 percent, and emergency operation was avoided for 288 patients. (Arch. Surg., Aug. '48 - W. Requarth and F. V. Theis)

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The Effectiveness of Drugs in Preventing Postoperative Penile Erections: The pain, wound separation, and hemorrhage occasionally seen in patients undergoing penile surgery are disconcerting complications to both patient and surgeon. These complications could be reduced to a minimum if erections could be stopped or diminished during the immediate postoperative period.

It was decided to evaluate the effectiveness of sodium bromide, oral diethylstilbestrol, and hypodermic estrone on young male patients who were to have circumcisions. The patients used in the study were enlisted Army personnel. They were admitted to an Army station hospital at a port of embarkation the day before surgery, and were not discharged until the fifth postoperative day or later to allow for close observation, daily recording, and strict control in the administration of the appropriate drugs.

In this series no dressings were used, the patients being instructed to sponge the wound with tepid boric acid solution from every 30 to 60 minutes during the day of operation. This usually resulted in a dry and painless wound after a few hours.

Of a total of 157 circumcisions done in this series, 125, divided into 5 study groups, are reported upon here; the remaining 32 cases were eliminated from the series because of missed medications or incomplete follow-ups.

Originally, the cases were divided into 4 groups of 25 patients each. Patients were assigned at random to the various study groups. Group one consisted of 25 patients who were used as the control group; they received no medication other than an occasional 5 grains of aspirin. Patients in the second group were

given oral diethylstilbestrol in a dosage of 5 mg. the afternoon before surgery, and then 5 mg. twice daily through the fifth or sixth postoperative day. Sodium bromide in onset dose of 2 Gm. the afternoon before operation, and 1 Gm. three times daily thereafter, was given to patients in the third group. Those in the fourth group were treated by hypodermic injections of estrogen once daily (1 mg. or 10,000 units of Estrone) beginning on the day before surgery. Later the authors' attention was drawn to a recent report by Higgins in which he recommended the preoperative use of stilbestrol in young hypospadius patients until they are "unable to have an erection." Accordingly, a fifth group of 25 patients was added, giving them 5 mg. of stilbestrol twice daily for from 3 to 7 days before surgery, and continuing until the fifth postoperative day.

Table I shows the total number and average number of erections in the five groups.

TABLE I

GROUP	TOTAL NUMBER OF ERECTIONS FOR FIVE-DAY PERIOD	PERCENTAGE AS COMPARED TO CONTROL GROUP	AVERAGE NUMBER ERECTIONS PER MAN PER DAY
I Control	179	100	1.43
II Diethylstilbestrol (started the afternoon before surgery)	135	75	1.08
III Sodium bromide	128	71	1.02
IV Estrone	152	84	1.21
V Diethylstilbestrol (started at least three days preoperatively)	56	31	0.44

The age (from 16 to 30 years), weight (from 125 to 225 pounds), or race of the patient seemed to have little relationship to the frequency of erections. The patients classified as having a nervous emotional status had the greatest number of erections.

Complications encountered in the 157 cases of circumcisions were on the whole minimal. Of 30 patients given bromides, one had nausea and 3 had nausea and vomiting (one of which had such severe vomiting that the drug was discontinued). Only one of the patients given oral diethylstilbestrol had nausea. The high incidence of gastric reactions reported in other series using stilbestrol therapy was not substantiated in this group.

There were 5 patients with mild postoperative bleeding from the circumcision wound, and 2 with severe bleeding, necessitating ligation of the bleeders. One patient had a severe wound separation about 10 days postoperatively, due to frequent and intense erections which came on after the stilbestrol therapy had been discontinued on the seventh postoperative day. Two other patients had small, partial wound separations. One patient had a persistent subcutaneous infection of the penis manifested by pain, tenderness, and edema that required incision and drainage on the ninth postoperative day.

It is concluded (1) that postoperative comfort can be improved, and complications reduced in patients undergoing circumcision by minimizing erections with the use of adequate pre- and postoperative stilbestrol therapy, and (2) that in

plastic operations or amputations of the penis, prophylactic stilbestrol therapy to minimize erections would seem to be particularly indicated. (Surgery, Dec. '48 - R. A. Price and O. J. Penna)

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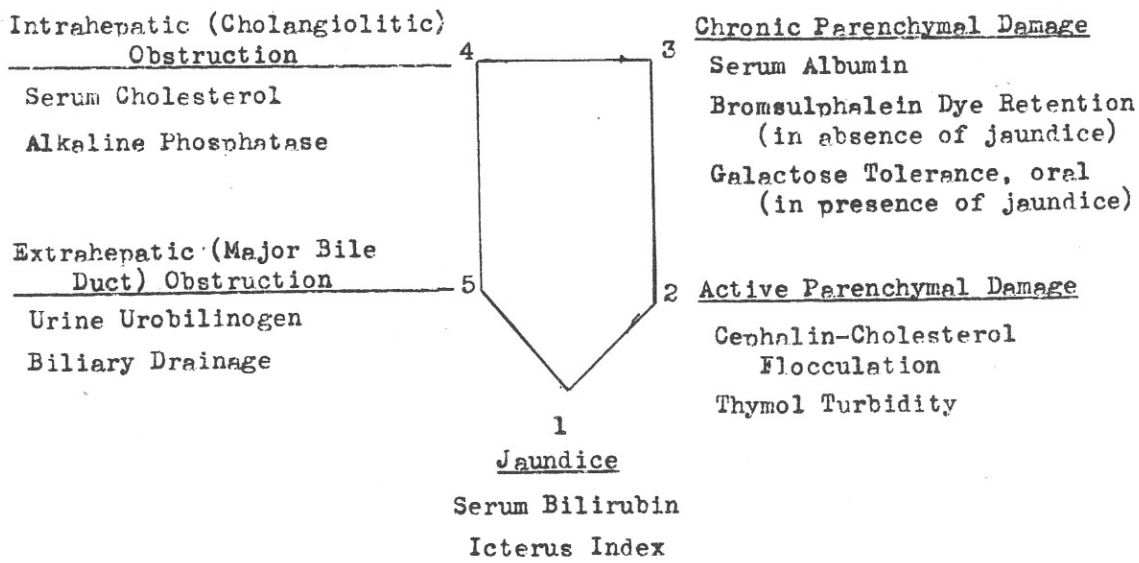
Liver Function Tests: There is presented below a simple schema coordinating the more important tests for estimating the functional capacity of the liver and for differentiating the various types of jaundice.

SCHEMA FOR COORDINATION OF LIVER FUNCTION TESTS
(MODIFIED AFTER GREENE)



Types of Liver Disease

Hemolytic Icterus	1
Acute Hepatitis	1, 2
Cirrhosis of Liver with Jaundice	1, 2, 3
Cirrhosis of Liver without Jaundice	2, 3
Cholangiolitic Obstruction	1, 2, 4
Common Duct Obstruction	1, 4, 5
Common Duct Obstruction with Biliary Cirrhosis	1, 2, 3, 4, 5
Carcinoma of Liver (Primary or Secondary)	Irregular

In this figure, liver and/or biliary tract disease is analyzed according to the presence or absence of five factors, namely, jaundice, active (acute) parenchymal damage, chronic parenchymal damage, intrahepatic obstruction and extrahepatic obstruction. Thus, the presence of jaundice may be revealed by an elevation of the serum bilirubin and icterus index, active parenchymal damage by positive cephalin-cholesterol flocculation and thymol turbidity tests, chronic

parenchymal damage by decreased serum albumin, by bromsulphalein dye retention in the absence of jaundice and by an abnormal galactose tolerance test in the presence of jaundice, intrahepatic (cholangiolitic) obstruction by an elevated serum cholesterol and alkaline phosphatase and finally, extrahepatic (major bile duct) obstruction by the persistent absence of urobilinogen in the urine and of bile in duodenal drainage. Below the figure, various types of liver disease are tabulated and the associated alterations in the pattern are indicated. Thus, in hemolytic icterus, there is jaundice as revealed by a high serum bilirubin and icterus index but no disturbances in the other four factors. In cirrhosis of the liver without jaundice only factors 2 and 3 are abnormal, namely, evidence of active parenchymal damage (positive flocculation tests) and chronic parenchymal damage (decreased serum albumin and bromsulphalein dye retention) and so on.

This schema is by no means complete or infallible. It is intended as a framework to which may be added other liver function tests depending upon the particular desires or experiences of the clinician. It possesses, however, simplicity and not infrequently affords diagnostic aid by the utilization of relatively few laboratory procedures.

Under the heading of flocculation tests, a number of procedures have been described, the purpose of which is to assay aberration of the serum protein fractions resulting from disease of the parenchymal cells of the liver. In Table II (on the next page) the results obtained in 5 patients chosen from a large series are detailed. Thus, in Case 2, infectious hepatitis, it may be noted that each of the flocculation or precipitation tests is abnormal. Case 3 is an example of the results obtained in early obstructive jaundice; each of the flocculation tests remains normal even in the presence of marked hyperbilirubinemia. When secondary biliary cirrhosis supervenes during the course of obstructive jaundice, the flocculation procedures become abnormal as may be noted in Case 4. The findings in active portal cirrhosis are shown by the results obtained in Case 5; hepatic damage is revealed by abnormal flocculation tests throughout. In Case 6, a slight dissociation between the various procedures is demonstrated. In this patient with familial hepatic dysfunction, the thymol turbidity test alone remains normal; it may be assumed that the serum lipoproteins were not affected by the underlying hepatic dysfunction.

It is stressed that these simple though important laboratory procedures supplement each other. When these flocculation tests are carried out simultaneously, a better panorama of the alteration in the serum protein fractions is envisaged than can possibly be obtained by the performance of any single procedure alone.

TABLE II. COMPARISON OF SEVERAL FLOCCULATION TESTS IN PATIENTS WITH HEPATIC DISEASE

Case	Diagnosis	Iclerus Index units	Cephalin-Cholesterol Flocculation 24 hour reading	Thymol		Colloidal Red Flocculation	Zinc Sulphate Precipitation				
				Turbidity units	Flocculation		1	2	3 hours	4	5
	NORMAL RANGE	4—6	0—+	0—4	0—+	0—2	0	0	0	0	0
1	Normal	6	±	1	0	0	0	0	0	0	0
2	Infectious Hepatitis	176	++++	12	++++	5	++	+++	++++	++++	++++
3	Obstructive Jaundice Due to Carcinoma of the Head of the Pancreas	121	0	1	0	0	0	0	0	0	0
4	Congenital Atresia of the Common Bile Duct with Secondary Biliary Cirrhosis	140	++	5	+++	4	0	±	+	++	+++
5	Portal Cirrhosis	24	++	5	+	5	+++	++++	++++	++++	++++
6	Familial Hepatic Dysfunction	12	+++	2	++	3	0	+	+	++	+++

(Bull. New York Acad. Med., Jan. '49 - M. Bruger and E. Oppenheim)

Postvaccinal Encephalitis: In March 1947, in New York City, because of the exposure of a considerable number of the population to smallpox, it was considered wise to urge vaccination on all city residents. Within a period of about a month, approximately 5 million people were vaccinated. It was realized that there existed the known risk of encephalitis following vaccination, but it was felt that the risk of smallpox was the greater one. Soon after the termination of the vaccination program and for 2 months thereafter, an investigation was made to find any possible case of postvaccinal encephalitis.

A diagnosis of postvaccinal encephalitis made on clinical grounds is a presumptive diagnosis. Not only is there no difference between the clinical picture of this disease and that of other encephalitides, but there is often little to distinguish it from cases of tumor of the brain or of tuberculous meningitis. Of the cases in which the diagnosis of postvaccinal encephalitis was made ante mortem, 2 were shown at post mortem to have been cases of tuberculous meningitis, one of brain tumor, and one of hypertensive vascular disease with coronary occlusion and congestion of the brain.

From this investigation, 49 patients with the diagnosis of postvaccinal encephalitis were found. Of these, 8 died and were autopsied. Four of the patients, as already indicated, were shown to have died of a disease other than encephalitis and were excluded from this series. The remaining 45 were accepted as having true cases.

The 45 cases of this series, following 5,000,000 vaccinations, give a ratio of one case to 110,000 vaccinations. The incidence of postvaccinal encephalitis varies greatly in different countries with the highest incidence in Europe, chiefly in Holland and England. In the United States, Armstrong noted 71 cases from 1922 to 1932.

Of the 45 patients, 33, or 73.3 percent, were 20 years old and over; 10, or about 20 percent, were under 15 years of age, and none were in the first year of life. No conclusions can be drawn from these data because the age distribution of the individuals vaccinated is not known. However, many more adults than children were vaccinated. Moreover, the number of infants vaccinated during the campaign was very small, since the vaccination of infants is a routine procedure in the city. In countries where the incidence of postvaccinal encephalitis is high, cases occur in infants, but in a much smaller ratio than in older children. In general, it appears from the literature that encephalitis occurs more commonly in children between the ages of 3 and 12.

Of the 45 patients, 25 were men and 20 were women. Equal distribution in the sexes was also noted in Holland and Austria, but a higher attack rate in women occurred in England. Forty-two of the patients were white, and 3 were Negroes.

The incubation period varies, according to the reports in the literature, from 2 days to a month, with an average of from 10 to 12 days. In this series,

8 patients had an incubation period of from 1 to 7 days; 25, from 8 to 14 days; 7, from 15 to 21 days, and 5, from 16 to 28 days. The average incubation period was between 10 and 12 days.

The clinical picture varied. The onset usually was abrupt, with fever, headache, vomiting, and changes in the mental state. In a few cases the initial symptoms were followed by a period of remission lasting from 24 to 72 hours, after which symptoms continued to progress. The fever was usually slight in the milder cases and was accompanied by dizziness, irritability, ataxia, and personality changes. In the more severe cases, the fever was higher and the symptoms more severe. Disorientation, aphasia, apathy and confusion were common. Hyperpyrexia (in a few instances temperature as high as 108° F.), and delirium, convulsions, stupor, and coma occurred in very severe cases. Most of the patients showed signs of nuchal rigidity with positive Kernig and Brudzinski signs. Paralyses of the extremities were not unusual, and retention of urine was frequent. Occasionally, there was incontinence of urine or feces. A number of patients showed involvement of cranial nerves, particularly the facial. Changes in deep and superficial reflexes were noted; in some cases these were exaggerated, in others, diminished or absent. The Babinski sign was occasionally positive.

Usually, the clinical course was short, and complete recovery occurred in one or 2 weeks, although there were occasional relapses. Even patients with the most alarming symptoms at onset, such as hyperpyrexia, convulsions, and coma showed remarkable improvement within a period of 72 hours, and then rapidly progressed to complete recovery. Most of the patients were able to leave the hospital within 2 weeks. Of the 41 that survived, one could not be located for follow-up, 38 made a complete recovery, one had residual hemiparesis, and one residual optic neuritis half a year after onset.

Spinal fluid examinations were made at least once in all but 3 cases. Clear fluid under pressure was the commonest finding. In 16 cases the cell count was less than 10 per ml.; in the rest the count varied from 14 to several hundred with an average of 100, lymphocytes predominating. The protein concentration was under 35 mg. per ml. in 10 cases, and from 36 to 110 mg. per ml., with an average of 61, in 21 cases. It was not reported in the others. Sugar was normal in all. Cultures of the fluids were uniformly negative.

Grossly, there is little to distinguish the brain and cord in a case of postvaccinal encephalitis from that in other types of encephalitis. Histologically, however, there are great differences. The meningitis is of a mild character. The distinctive lesions are in the brain and spinal cord with areas of softening in which demyelination can be demonstrated. White and gray matter are both involved. In virus encephalitis, cuffing, and infiltration of the Virchow-Robins space frequently occur, but in postvaccinal encephalitis, in addition to the cuffing, areas of softening occur which extend some distance beyond the vessels and

demyelination can be demonstrated in them. They are not associated with vascular thrombi. The same lesions appear in encephalitis following smallpox, chickenpox, and antirabic vaccination, and are similar to those found in disseminated sclerosis.

No such lesions were seen in the autopsy specimens in the 4 fatal cases in this series. In 2 cases there was only marked congestion of the brain; in the other 2, cuffing of the vessels in the brain and cord was demonstrated, but it did not extend beyond the Virchow-Robins space, and no demyelination was present.

Whether deaths may occur in postvaccinal encephalitis without the occurrence of typical lesions, it is difficult to state. Doctor Rivers, who examined the histologic sections in 3 of these 4 cases, says that he would be loath to make a diagnosis of postinfectious encephalitis unless a characteristic picture were present, since in frank cases of postvaccinal encephalitis that are fatal shortly after the appearance of symptoms and signs, demyelination is usually present. Although the 4 deaths in this series have been ascribed to postvaccinal encephalitis, definite proof on the basis of accepted pathological changes is lacking.

Attempts to recover virus from the brains in 3 cases at autopsy were unsuccessful.

It is obvious, from the reports quoted, that vaccine virus regularly enters the blood stream soon after vaccination; its presence in the brain in cases of postvaccinal encephalitis is therefore no proof that the virus is responsible for the pathological changes. A number of investigators have been unable to reproduce lesions of postvaccinal encephalitis in animals by injection of vaccine virus, although others have been successful. Many theories have been offered to explain the etiology of the disease, but none has been proved.

No specific therapy was used in any of the 45 patients. Recovery appears to be complete in most cases, wherever it occurs, irrespective of the therapy used. Treatment with convalescent serum was suggested by the Rolleston Committee and has been advised by several authors, but no one has used it in a series of cases with adequate controls to make significant an expression of opinion of its value. (Am. J. Med. Sc., Nov. '48 - M. Greenberg and E. Appelbaum)

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Ornithosis (Psittacosis) from Ducks: The appearance in recent years of sporadic and epidemic pneumonitis of an atypical character has resulted in the delineation of the clinical entity known as primary atypical pneumonia. The negative bacteriologic findings associated with the disease have prompted numerous attempts to isolate a causative viral agent. Findings regarding primary atypical pneumonia have been equivocal, but a number of viral agents capable of causing

pneumonitis clinically indistinguishable from primary atypical pneumonia have been isolated. Certain of these agents belong to the psittacosis-lymphogranuloma group of viruses, which were the first viral agents of animal origin recognized as capable of producing pneumonitis in man.

In this report the knowledge to date concerning pneumonitis caused by the viruses of psittacosis (ornithosis) is summarized, and 8 cases of ornithosis in man resulting from contact with a hitherto unrecognized focus of infection, the domestic Pekin duck are presented. The initial diagnosis was made by the author in April of 1945 in a case of atypical pneumonia in a person who worked with ducks, and was verified serologically soon thereafter.

The prediction by Meyer, and, Meyer and Eddie, that barnyard fowl may be a reservoir of ornithosis is fulfilled in this communication in which all but one of the patients were in intimate contact with the domestic duck. These birds are grown in tremendous numbers (7 million annually) on a number of farms located in the eastern end of Long Island. The association between human pneumonitis and occupational exposure was recognized and diagnosis verified by complement fixation tests. Subsequently an ornithotic virus was isolated from the ducks by Drs. K. F. Meyer and B. Eddie of the University of California.

Psittacosis is a specific disease of birds of the parrot family that is highly communicable to man. Ornithosis is the name given by Meyer to similar infections in birds other than those of the parrot family. Psittacosis-ornithosis is essentially an endemic disease in a variety of wild and domesticated birds which, under certain circumstances, may become epidemic. The work of Meyer and Eddie on domesticated birds and of Burnet on birds in a wild state indicates that the infection is transmitted to the young in the nest, either by parents who are shedders of the virus or through activation of latent infection in the breeding female. The mortality of the infection so acquired is low; excretion of the virus in droppings and nasal discharges ceases in most birds after several months. The virus, however, remains latent in the spleen and other organs and may become activated by adverse environmental conditions. Relapses, therefore, may occur in which excretion of the virus recurs. Human infection follows contact, fleeting or intimate, with infected birds. Such infections, as a rule, follow a few weeks after the birds have been acquired. Visitors to the infected person may become infected, and this accounts for the characteristically localized epidemics of the disease. Transmission to man occurs in one of 2 ways; more commonly by inhalation of dust containing virus particles originating in droppings or nasal secretion from infected birds, less commonly the infection is acquired by the bite of an infected bird. The majority of clinical cases occur in adults. Children under 10 years of age appear to be much less susceptible to infection, and, usually the disease in them runs a much milder clinical course. The opinion that psittacosis is invariably severe and associated with a high mortality rate has been modified in recent years. Although the classical disease is still associated with an appreciable mortality rate, the mortality following infection by

related ornithotic strains of virus tends to be lower. Numbers of individuals exposed to infection in birds never develop clinical manifestations but they do show, as evidence of previous infection, high titers of complement fixing antibodies in their serum.

Human-to-human spread has been limited by the necessity for contact with an actual case and has been reported about 30 times, usually in nurses or doctors attendant upon patients. Since Gerlach's demonstration of virus in the sputum of 4 individuals who lacked clinical symptoms of psittacosis, the possibility of a human carrier state has been known to exist. Meyer and Eddie's recent report of an individual whose sputum harbored virus 8 years after recovery from psittacosis is of particular interest, since it is one step further along the course the disease may take to become a disease of man. Although no cases have been traced to contact with this human carrier, it is conceivable that a mutant strain capable of infecting contacts and established in carriers, may arise in the future and alter the ecology of the disease. This potentiality has been emphasized by both Burnet and Smadel.

The causative virus is a member of an interesting group of organisms intermediate in morphology and metabolism between the true viruses on the one hand, and bacteria and rickettsia on the other. The members of this group have staining qualities and may be seen with ordinary microscopy and thus resemble bacteria. They further resemble bacterial organisms in being susceptible to the action of sulfonamides and of penicillin. Thus the virus of lymphogranuloma venereum is susceptible both in the laboratory and clinically to the action of sulfonamides, and members of the psittacosis-ornithosis group to the action of penicillin. The relationship between the members of the latter group is not yet clear. They may be variant forms of each other, or the descendants of a common strain modified by residence in different animal hosts. Although complement fixing antibodies appear with infection by many of the members of this group, differentiation by this means is impossible because of cross-reactions. Differentiation is possible solely through consideration of the source of the virus and the difference in the effects produced by various members of the group on experimental animals and birds.

Earlier work led to the belief that atypical pneumonia caused by agents of this group was relatively common. More recent work relegates psittacosis (ornithosis) to a minor position as a factor in the causation of atypical pneumonia. On the other hand, the steadily increasing number of animal reservoirs of viruses of this group, and the demonstration of the carrier state in man warrants constant consideration of the possibility of psittacosis-ornithosis in all atypical pneumonias.

The principle findings in man with this disease are in the lungs. These show a diffuse confluent bronchopneumonia which starts at the hilum and extends to the periphery. Pleural involvement is rare, and bronchitis uncommon unless there is secondary bacterial infection. Microscopically, the alveolar walls show marked mononuclear infiltration, and the alveolar spaces are filled with a

monocytic exudate and alveolar epithelium which is characteristically thrown into folds of proliferating cuboidal cells. Secondary invasion by the pneumococcus or streptococcus may alter the picture. The liver shows fatty degeneration and areas of focal necrosis. The spleen may be enlarged and at times shows hyaline degeneration of the smaller vessels.

In general the incubation period varies from 7 to 15 days, although in some cases it has been much longer (up to 30 days). After the bite of a parrot a 30-day incubation period has been reported.

The initial symptoms are those associated with any infection and resemble more particularly those of influenza. There is headache, photophobia, sweating, malaise, anorexia, and abdominal distention. A characteristic finding is a relatively slow pulse. In cases of usual severity the fever is continuous and lasts for 3 or 4 weeks. Defervescence is by lysis in those patients who recover spontaneously. Physical findings are confined to the lungs which show a variety of changes. These vary from diffuse or patchy areas of pneumonitis without consolidation to areas of focal consolidation in one or both lungs. An outstanding feature of the pneumonitis is the paucity of complaints referable to the respiratory tract. Dyspnea and tachypnea are rare, despite evidences of widespread pulmonary involvement. Cough may be slight or absent, and sputum scarce or mucoid. Roentgen-ray findings are positive before there is any evidence on physical examination that pulmonary involvement is present. They precede physical signs by several days and initially are confined to the hilar regions and to the peribronchial areas centrally. In a few days the infiltration spreads peripherally, and signs of consolidation and focal infiltration of the parenchyma appear. Physical signs of pneumonitis may be evident, and roentgen-ray findings appear minimal. In the 8 cases of the present series, there was no correlation between the clinical severity of the illness and the degree of pulmonary involvement on examination or roentgenogram. Several patients with a moderate clinical picture, and one severely ill patient, showed only peribronchial infiltration on roentgenogram.

Convalescence following recovery is usually prolonged and relapses are not infrequent. Complications are few. Myocarditis and peripheral thromboses have been reported. Death results from toxemia or pulmonary insufficiency. The severity of the clinical picture is dependent on a number of factors. Age and associated changes tend to favor a severe illness. There is also some variation in the clinical severity of the infection with the different members of the psittacosis-ornithosis group. The ornithotic strain present in the patients of this series caused predominantly moderate clinical illness.

Clinical differentiation between psittacosis-ornithosis, primary atypical pneumonia, influenza and typhoid fever may be extremely difficult. A history of contact with birds of any type may be helpful. The unusual association of extensive pneumonitis without dyspnea or much cough may be significant, as may be the bradycardia. Essentially, the diagnosis is made by laboratory procedures.

Negative blood and stool cultures and a negative Widal help to eliminate typhoid fever. Absence of cold agglutinins and a negative agglutination reaction for streptococcus MG help to eliminate primary atypical pneumonia. Failure to isolate virus and a negative complement fixation reaction serve to eliminate influenza. Positive findings in psittacosis-ornithosis are of 2 types. The first is absolutely diagnostic, and follows inoculation of a white mouse with blood (which contains virus from a one- to 3-day illness) or sputum obtained from a 5- to 23-day course of the disease. Characteristic changes in the organs of the mouse follow, and identification of the virus in the tissues is possible by ordinary microscopy. The second positive diagnostic procedure is the complement fixation reaction. Complement fixing antibodies appear in the serum on about the 8th day of illness, and a significant rise in titer above the 8-day level on the fifteenth day is considered diagnostic. Similarly, an elevated titer during illness followed by a fall early in convalescence is suggestive. Single determinations, if high, may be helpful. The titer is considered to be within diagnostic levels if it reaches a dilution of 1:16 (4 plus).

As knowledge concerning the disease has accumulated, the original estimate of a mortality of from 30 to 40 percent has fallen considerably. An average mortality estimate of 10 percent is more likely to approximate actual occurrence. It is not unlikely that certain strains of virus cause even a lower mortality rate.

Despite some experimental evidence that large doses of sulfadiazine may inhibit growth of the viruses of this group, its clinical use in infections in human beings has been disappointing. Penicillin has been shown to be efficacious in experimental infections of mice and has been reported as influencing favorably infections in man. In the mouse, relatively enormous doses must be given to prevent death. Equivalent dosage in man would require the administration of from 3 to 11 million units daily. Despite this, favorable reports of the use of penicillin in human infection have followed the administration of from 80,000 to 300,000 units daily. Thus, Parker used 120,000 units daily rather late in the course of the disease and was impressed by the favorable response. Flippin et al. report definite benefit in a patient who had been ill for 19 days and had not responded to sulfonamides. This patient responded to 100,000 units daily. Meyer and Eddie report favorable results with doses up to 300,000 units daily, and warn against discontinuing penicillin therapy too soon after defervescence in order to prevent relapse.

The ornithotic infection in the 8 patients of this series is of considerable epidemiologic interest. The infection in the ducks was shown subsequently to be of an endemic nature. In consequence, most of these individuals had been exposed to ornithotic infection for years and had thus apparently acquired sufficient immunity to remain well until their present illness. The seasonal onset (April and May) of most of the illnesses is important in attempting to explain the loss of immunity. The fact that duck growing is at a minimum in cold weather and the first ducks marketed are killed in March suggests the factors responsible for the onset of the illness. It would seem that individuals who have lost sufficient

immunity after some months without contact with ducks, on again being exposed to infection, develop clinical illness. Only a small percentage, however, of those employed on the farms lose sufficient immunity to become susceptible. This sequence of events, which is a reinfection rather than an illness after an initial exposure, may account for the generally mild nature of the disease, since an accelerated immune response under such circumstances is to be expected. That infection in other workers without any history of illness is widespread is evidenced by the finding of complement fixing titers within diagnostic levels in 37 percent of duck workers, as contrasted with similar levels in only 3.4 percent of the general population locally.

In harmony with the generally mild character of the disease locally is the type of pulmonary change found on roentgen-ray and physical examination. Several of the patients had minimal hilar changes indistinguishable from those of other upper respiratory infections. Others had some hilar infiltration and peribronchial thickening. These findings were not necessarily limited to early cases. In this respect it appears that ornithosis may resemble in behavior other viral infections of the respiratory tract which are capable of producing all degrees of pulmonary involvement from minimal changes to extensive pneumonia.

The response to penicillin in 4 of 6 patients who were given 400,000 units daily (50,000 units every 3 hours) was prompt and left little doubt as to its efficacy in such dosage. The failure of the penicillin to affect the other 2 patients, who showed defervescence after penicillin was stopped and sulfadiazine started, is difficult to explain unless it be assumed that the dosage was inadequate or that a mixed infection was present. There is no evidence that administration of penicillin for more than the usual time after defervescence is necessary to prevent relapse. (Am. J. M. Sc., Nov. '48 - W. Wolins)

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Penicillin or Silver Nitrate as a Prophylactic Against Ophthalmia Neonatorum? Gonorrheal ophthalmia has been successfully treated with penicillin during the last few years; however, penicillin as a prophylactic agent is still in the experimental stage, despite recent reports in the lay press giving the impression that the value of penicillin for this purpose is proved.

The District of Columbia and all of the states except Utah have laws or regulations requiring the use of a prophylactic agent in the eyes of the new-born. In most instances the law either leaves to the discretion of the state health department the type of prophylactic agent to be used or specifies, "one percent silver nitrate or equally effective agent."

Regardless of the effectiveness of a prophylactic agent, it is inevitable that there will be cases of ophthalmia neonatorum for two reasons: (1) carelessness on the part of the attendant in instilling the agent, and (2) introduction of infection after the agent has been instilled. Therefore the occurrence of rare cases of

ophthalmia neonatorum may be expected as long as the infectious agents themselves are found in a community. Because of better prenatal care today, and improved methods and facilities for the treatment of gonorrhea as well as other infections producing ophthalmia neonatorum, it will require a far larger study now than in Crede's time to establish the value of any new prophylactic agent.

There is no evidence that permanent damage results from the use of one or 2 percent silver nitrate. Solutions left standing may reach a concentration as high as 50 percent. For this reason, it has been suggested that silver acetate be substituted, because it appears equally effective but becomes saturated at 1.2 percent. However, furnishing one percent silver nitrate in paraffin-lined beeswax ampules, as supplied by most health departments, has overcome danger to the eye from high concentration of the drug. A study by the National Society for the Prevention of Blindness in 1948, showed that 49 out of 57 professors of obstetrics in approved United States medical schools were using these ampules. These professors reported 112,035 live births in their services in 1947, with only 67 cases of ophthalmia neonatorum. Many of these cases were due to infections other than the gonococcus. In the 67 cases there were 2 in which there was some corneal damage. There was no damage from silver nitrate in the 112,035 infants.

If it should be established that penicillin or other antibiotic is as good as silver nitrate, it will be some time before the mode of administration, the strength of solution, and many other important factors are determined. For practical reasons, silver nitrate in paraffin-lined beeswax ampules is to be preferred at the present time for home deliveries.

Following several months' study, a subcommittee of the New York Academy of Medicine, on February 10, 1948, recommended, "that no change be made in the Sanitary Code to require the use of penicillin for the prophylaxis of ophthalmia neonatorum until there is more experience with its use."

On 21 June 1948, the trustees of the Association for Research in Ophthalmology adopted a resolution as follows:

"It is resolved that at the present time the state of knowledge concerning prophylaxis of ophthalmia neonatorum is not sufficiently settled to permit a recommendation of any change in procedure, but instead research along this line should be encouraged."

On 26 June 1948, both the Council of the American Academy of Ophthalmology and Otolaryngology and the Section on Ophthalmology of the American Medical Association approved a report of joint committee which concluded as follows:

"In view of the incomplete present state of our knowledge on this subject, your Committee deplores the recent article in ....(popular magazine).... and is in full agreement with the conclusions and recommendations embraced in the report of the Subcommittee of the New York Academy of Medicine - namely,

that no changes be now recommended in the existing laws. It is the further opinion of your Committee that while it is possible, indeed even probable, that some form of antibiotic prophylaxis will eventually replace the present use of silver nitrate, that much further investigation of the matter is needed before any concrete recommendations can be made. Such investigations are now in progress in established clinics, and it is hoped that the answer may ultimately be forthcoming."

In conclusion, it is the opinion of the authors, Doctors Conrad Berens and Franklin M. Foote, Vice-President and Executive Director respectively, of the National Society for the Prevention of Blindness, Inc., New York City, that no change concerning the use of prophylactic agents in the prevention of ophthalmia neonatorum should be recommended at the present time. However, carefully controlled research with silver nitrate, penicillin, and possibly other antibiotic agents should be encouraged in institutions where such investigations can be carried out under strictly scientific conditions and with adequate controls. (Am. J. Pub. Health, Dec. '48)

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Intoxication with Vitamin D: There are still many physicians who use large doses of preparations of vitamin D without the necessary precautions which should be observed with substances potentially so toxic. During the past three years the authors have recognized 11 instances of intoxication by such sterols. Ten of these patients (who were being treated for arthritis) had been given the drugs by physicians who were not aware that the alarming symptoms being exhibited were related to the therapy which they themselves were prescribing.

The age of these 10 patients varied from 33 to 68 years. Except for the youngest, all were more than 40 years old. Five of the group were males; five were females. Four had received "Ertron," two "Deltalin," two "Davitin," one "Dalsol," and one a combination of "Ertron" and "Darthronal." The highest daily dose received by any patient was 600,000 I.U.; the lowest dose was 150,000 I.U. The duration of therapy prior to the onset of toxic symptoms ranged from 2 to 18 months. The patient who received the largest daily dose, 600,000 I.U., became ill the earliest; but the patient who received the next highest dose, 500,000 I.U., did not manifest symptoms until he had taken the drug for eighteen months.

Eight of the 10 patients had severe gastro-intestinal symptoms, namely, anorexia, nausea, and vomiting. Weakness, fatigue, and lassitude were prominent complaints in all ten. Weight loss was noted in 8, occurring in a lesser degree in the patients who had lesser gastro-intestinal symptoms. Furthermore, in every instance weight loss and fatigue had been noted prior to anorexia and vomiting, and are, therefore, considered to be symptoms of intoxication with vitamin D per se. In none of the patients was vomiting of sufficient severity to produce alkalosis or to require intravenous therapy.

In 7 of the 10 patients polyuria, polydipsia, or nocturia were present, having appeared more or less coincidently with the fatigue and malaise. Intense generalized pruritus was a prominent complaint in two patients.

Despite careful search, only one of the patients in this group showed any of the more readily detectable gross evidences of calcification in periarticular, subcutaneous, or renal tissues. Nine of the 10 patients, however, manifested the characteristic eye lesions described by Walsh and Howard. These lesions, seen as yet only in patients with hypercalcemia, are visible by slit-lamp examination, and the deposits beneath the conjunctival basement membranes are thought to be composed of calcium salts.

All ten patients, when first seen by the authors were suffering from renal insufficiency. Nonprotein nitrogen in the blood (in all cases) was from 46 to 106 mg. per 100 c.c. Concentration of calcium in the serum was elevated in every case, ranging from 12.4 to 15.1 mg. per 100 c.c. Total protein of the serum was not abnormal in any case, and the A/G ratio was found normal in the 7 in whom this determination was carried out. Every patient's urine gave a strongly positive Sulkowitch reaction. Values of the inorganic phosphorus of the serum varied between 3.0 and 5.2 mg. per 100 c.c.; most were above the normal range but not conspicuously so, in view of the retention of nonprotein nitrogen.

The urine contained small amounts of albumin in 7 of the 10 patients; no albuminuria was observed in 3. The urine of only 4 patients contained a few hyaline and granular casts in the sediment. Four of the 10 patients had slight hypertension which reverted to normal within three weeks after stopping the drug, and none had retinopathy. Anemia was present in 9 of the 10 patients, microcytic hypochromic anemia in 5, and normocytic in 4.

Phenolsulfonphthalein excretion tests showed conspicuous reduction in renal function, except in one patient. This patient did not seem sufficiently dehydrated to account for the elevated nonprotein nitrogen on this basis. She had had symptoms of nausea and vomiting for six months. On the other hand, another patient had symptoms of intoxication for only sixteen days; yet PSP excretion was reduced to 28 percent in two hours and urine could not be concentrated above 1.010.

After the condition was recognized, the only therapy prescribed was (1) cessation of drug administration, (2) "forced fluids" (no patients exhibited any tendency toward water or salt retention, and an effort was made to have them drink 4000 c.c. daily), and (3) a diet low in calcium. By the latter two measures it was hoped to lower the hypercalcemia as rapidly as possible and to reduce the likelihood of renal calculus formation.

Subjective improvement occurred within from two to eight weeks after instituting this regimen; nausea, vomiting and lassitude disappeared, even in those who showed but small objective improvement by a fall in serum calcium

or betterment of renal function. Serum calcium fell to some extent within a month in 8 patients. Two patients had normal blood calcium within two months, one within three months, and one within four months. In general the serum phosphorus tended to fall, sometimes to below normal figures, with return of blood calcium to normal. One patient still had a blood calcium of 12.2 mg. per 100 c.c. fourteen months after stopping the vitamin D preparation. At this time, serum phosphorus was 2.5 mg., and nonprotein nitrogen was still 46 mg. per 100 c.c., despite improvement in PSP excretion from 13 to 33 percent in two hours. Another patient, four months after drug withdrawal, still had a blood calcium of 12.9 mg. per 100 c.c.; serum phosphorus was 2.1 mg.; nonprotein nitrogen had fallen from 75 to 35 mg.; PSP excretion had risen from 24 to only 40 percent in two hours; and the patient still could not concentrate the urine above a specific gravity of 1.011.

The eleventh patient was one in whom the authors induced hypercalcemia with calciferol (crystalline vitamin D_2), "Drisdol," in the short period of 14 days. It was found that this patient had had unrecognized idiopathic hypoparathyroidism. This patient showed conjunctival deposits which disappeared five months after cessation of the calciferol.

One drug firm which advertises its product to the medical profession as "safe," attributes its lesser toxicity to the method of manufacture (Whittier process). Though there is reason to believe that this product is more widely used in the treatment of arthritis than other brands of vitamin D, nevertheless 5 of the 10 patients in this series had been intoxicated with this preparation.

The mechanisms by which preparations of vitamin D may be injurious is an interesting field for speculation, and a rich one for further study. The outstanding symptoms of intoxication with these compounds are fatigue, weight loss, anorexia, and vomiting. Impairment of renal function and degenerative lesions with vicarious calcification are the outstanding clinical signs. Since these symptoms and signs are also commonly seen in hyperparathyroidism, one is tempted to place the blame on hypercalcemia, which is common to both conditions. The ophthalmic lesions, demonstrated in 10 of the 11 patients of this group, have been found by the authors only in patients who have had hypercalcemia. It seems reasonable to postulate that the hypercalcemia is responsible for similar depositions of lime salts in the other areas of vicarious calcification, and may be the prime cause of the renal insufficiency.

Intoxication with vitamin D, like hyperparathyroidism, seems to induce a situation wherein more than the normal amount of physiologically active calcium is carried in the serum. The older experiments of Jones and Rapoport indicated that irradiated ergosterol greatly enhanced the intestinal absorption of calcium and phosphorus when these two elements were fed independently to the dog. Warkany showed the same in rabbits. Bauer, Marble, and Claflin found that in normal persons doses of 30 mg. of irradiated ergosterol lowered fecal calcium

and phosphorus, whereas urinary calcium and phosphorus were increased. Their findings were interpreted to mean that absorption of calcium and phosphorus had been enhanced by the drug. Hypercalcemia would thus seem more likely to result in patients on high calcium diets than on low, especially if the high calcium intake is not accompanied by a high phosphorus intake.

However, Hess and his co-workers found that large doses of irradiated ergosterol produced hypercalcemia in infants and rats even when there were minimal quantities of calcium in the diet, and later found this to be true in dogs fed diets absolutely free of calcium. Calcium balance was negative in the dogs so treated, and the ash of the bones of rats receiving large doses of irradiated ergosterol was lower than that of control animals. Their conclusion was that the source of the marked increase in serum calcium, induced by excessive amounts of irradiated ergosterol, is the tissues, more particularly the bones which are the great storehouses of calcium in the body. Whereas, it might be said that the sterols used by these earlier workers were crude mixtures containing other sterols which might have been responsible for some of their findings, McLean has shown that pure preparations of vitamin D "in calcemic doses" produce resorption of bone and mobilization of bone mineral. A large experience with preparations of pure vitamin D over the past 10 years in patients suffering with hypoparathyroidism has convinced the authors of the correctness of McLean's view, that the fundamental precepts mentioned above hold good in patients treated with pure vitamin D_2 (calciferol). A rise in the total and physiologically active components of the serum calcium follows administration of doses of from 100,000 to 400,000 units (from 2.5 to 10 mg. daily) of calciferol. This rise may be obtained even though minimal quantities of calcium are presented in the diet, but can be greatly enhanced by administration of calcium salts by mouth.

The history in the present group of patients did not indicate that any had received high calcium, low phosphorus diets. One patient had received a quart of milk daily on the physician's advice, and another had been given calcium phosphate wafers coincident with the vitamin D therapy. All these patients were given diets very low in calcium immediately on recognition of their condition; yet hypercalcemia was slow to regress. It seems likely that the bones were the major source of the excess calcium in the serum.

A bone biopsy was carried out in only one of these patients. A small wedge-shaped piece of the ilium was removed; no abnormality could be detected in it by Dr. R. H. Follis. This patient had taken 100,000 units of vitamin D daily for a period of 12 months, and conjunctival deposits were readily detected by slit-lamp examination. A sternal biopsy specimen, obtained from a patient (previously reported on from this clinic) with acute toxicity resulting within 12 days of the administration of very large doses of vitamin D, likewise revealed normal bone.

Despite the frequency of digestive complaints, none of the patients in this series took sodium bicarbonate or other alkali. This may be the reason for the

absence of more conspicuous vicarious calcification. Hess observed that injection of sodium bicarbonate into dogs poisoned with irradiated ergosterol lowered the serum calcium and brought about reduction of urinary and fecal calcium, but led to increased precipitation of calcium and phosphorus in the tissues of the body.

Reversibility of the damage resulting from vitamin D intoxication is of great interest. Others have observed massive deposits of lime salts to disappear after varying periods following withdrawal of the drug.

All observers are agreed that the sooner manifestations of vitamin D intoxication are recognized and the drug withdrawn, the more likely will be complete recovery. However, in only two of the patients in this series have the authors believed recovery to be complete, and in only one of these was there any evidence of renal damage at the time the intoxication was recognized. In all the others, for the periods in which they have been followed, there have remained some evidences of renal damage, either inability to form highly concentrated urine or reduction in PSP excretion. But if the visible pathologic changes in the eyes are guides to regressive anatomic changes elsewhere, it may be that time will disclose all damage to have been repaired. This possibility seems unlikely, however, especially if calcification has developed in the arteries.

Using the criterion of continued hypercalcemia as an indicator of persistence of active drug intoxication, the duration of such activity, after the administration of the drug has ceased, seems to vary widely. In one patient, a period of twenty months elapsed before serum calcium returned to normal concentration. The authors were concerned lest some unrecognized concomitant process such as hyperparathyroidism might be present; but there is no evidence that vitamin D poisoning stimulates parathyroid overfunction, and subsequent events have proved these fears to be groundless. Though the deposits of calcium in the conjunctivas of this patient were seen to be diminishing gradually at each visit while the serum calcium remained at abnormal levels, it was only at the last visit in April, 1948, when serum calcium was found normal for the first time, that the conjunctival deposits had disappeared entirely. Thus, despite his continued renal insufficiency, there may be still hope of further improvement in renal function.

Just as clinical evidence of improvement after drug withdrawal varies widely with time, so, too, the dose and duration of administration of the drugs prior to intoxication seems to rest on factors of individual susceptibility, as yet unknown. Many authors have given to patients doses as high as, or higher than, those given to the patients in this series, and over far longer periods of time without any apparent intoxication. Perhaps variations in intestinal conditions may render absorption better in some patients than in others, or there may be more cellular resistance of unknown nature to the action of the drug in some than in others. It has been stated that the effectiveness of certain preparations of vitamin D are greatly enhanced when it is given in milk. None of the patients in this series received it in this way.

On the other hand, the great rapidity with which the patient with hypoparathyroidism became intoxicated is of interest. The authors have used preparations of vitamin D almost exclusively for the past 10 years in the treatment of severe cases of hypoparathyroidism. Usually the dose required to maintain normocalcemia in such patients on normal diets without calcium supplements has ranged between 100,000 and 300,000 international units (from 2.5 to 7.5 mg. calciferol) per day. It was surprising, therefore, to meet with a rise in serum calcium to 15 mg. per 100 c.c. and the rapid deposition of conjunctival deposits in a period of two weeks with the use of only 300,000 I.U. of the drug daily.

Seven of the 10 arthritic patients insisted that their joint symptoms were improved during the period of vitamin-D administration. It is not known how long hypercalcemia had been present before symptoms of intoxication appeared, but usually the patients reported that the discomfort in their joints had decreased within two weeks after beginning to take the drug. Many authors have attested to symptomatic relief of arthritis with vitamin D preparations without the production of hypercalcemia. It seems unlikely, therefore, that the symptomatic effect on the joints is due to hypercalcemia. After withdrawal of the drug, several patients complained of a sharp increase in arthritic discomfort and this coincided fairly closely with return of the serum calcium to normal. This was especially conspicuous in one patient whose serum calcium remained elevated for twenty months after drug withdrawal. Coincident with the eventual return to normocalcemia, his arthritis, symptomatically quiescent since beginning the vitamin D therapy, began to give him increasing trouble.

The wide variation in the susceptibility of patients to large doses of vitamin D preparations is emphasized. Ocular manifestations, subconjunctival deposits and lesions of "band keratitis" may be visible on slit-lamp examination before symptoms of intoxication or signs of renal irritation appear.

It is believed that the hypercalcemia is largely responsible for the symptoms and signs of vitamin D poisoning, but the mechanisms by which the hypercalcemia is induced remain obscure. Patients to whom these drugs are administered should be carefully followed by frequent slit-lamp examination, urinary analyses and determinations of the serum calcium. (J. Clin. Endocrinol., Nov. '48 - J. E. Howard and R. J. Meyer)

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Procaine Penicillin G in Sesame Oil - A Study of Reactions and Results in 400 Cases: During the past year several thousand patients on the general medical and surgical services at the Mayo Clinic have been treated with procaine penicillin G suspended in sesame oil. To date, no serious or alarming reactions have been encountered. The present report concerns an analysis of the therapeutic results but more especially the incidence of any reaction, whether immediate

or delayed, local or generalized, which may have followed the administration of this material to 400 patients. These 400 patients received a total of 1,718 injections of this material given by the intramuscular route. Sesame oil is preferred to any other oil previously used as a vehicle. For a number of years sesame oil has been used at the Clinic as a vehicle for the administration of a number of substances and no reaction has been observed after its use. During the past year this observation also has been made regarding the use of sesame oil as a vehicle for procaine penicillin G.

To date, no reactions have been observed which could be attributed to procaine intoxication or procaine sensitivity. It is believed that procaine penicillin G should not be administered to an individual known to be sensitive to procaine.

A few statements concerning the technic of administration might be helpful to those who have encountered difficulties involving purely the mechanics of administering the material:

The 10 c.c. ampule containing procaine penicillin G in sesame oil is far superior to a 1 c.c. container for routine administration. The success of the administration of the material depends on the ability to deliver an evenly divided suspension of the rather insoluble procaine penicillin G in the oil. This is accomplished by shaking the container vigorously and this mere procedure of suspending the material is greatly facilitated when shaking the 10 c.c. vial rather than the very small vial containing only 1 c.c. Once a good suspension of the material is ready, it should be withdrawn from the ampule by use of a 19-gauge or 20-gauge needle. Difficulty is inevitable if a needle smaller than 20-gauge is used. Many have experienced difficulty because the needle separates from an ordinary syringe once the pressure of injection has begun. No such difficulty will be encountered provided the physician will equip himself with a 2-c.c. Luer-Lock syringe fitted with a 19-gauge or 20-gauge, from 2- to 2 and 1/2-inch intramuscular needle. When the desired amount has been withdrawn from the ampule, injection should be made by the quick stab method deep into the muscle in the region of the upper outer quadrant of the buttocks. After completing the injection, withdraw the needle quickly. The area injected should not be massaged. <u>The material must not be given subcutaneously.</u> Local irritation and at times ecchymosis into the skin have been seen when the material has been administered inadvertently under the skin.

If these simple directions are followed, technical difficulties are not likely to arise. Experience with disposable syringes has lead to the conclusion that effective therapeutic blood levels do not occur in more than 70 percent of patients for the desired twenty-four-hour period, whereas more than 90 percent have been found to have adequate blood levels when the bulk preparation already described is used.

A number of patients who have previously received regular penicillin with subsequent development of urticaria have been able to take procaine penicillin without exhibiting this phenomenon.

The over-all analysis shows that the 400 patients received a total of 1,718 intramuscular injections of procaine penicillin G. The total number of reactions was 3, with an incidence of 0.75 percent. The first reaction consisted of localized erythema and induration which developed in the buttock of a child who had received a single dose of procaine penicillin G. The second reaction was likewise an area of local redness and edema in a child 2 years of age who had received three injections of procaine penicillin G. The third reaction was a generalized urticaria with some ankle edema which developed after the administration of five 1 c.c. doses given to an adult over a five-day period. This incidence of reactions is considerably lower than would be expected in a similar number of patients treated with aqueous penicillin, and is also considerably lower than the incidence of reactions which has occurred after the use of other previously available preparations such as penicillin in peanut oil and beeswax, in which case the incidence of reactions was of the order of 10 percent.

Approximately 75 percent (303 patients) of the group received five or fewer injections of this material. A number of patients received the material daily for from fourteen to eighteen days, one patient received the material daily for twenty-four days, one received it daily for twenty-six days, one daily for thirty-three days, and one daily for forty-three days without exhibiting evidence of local irritation or systemic reaction.

Most of the patients received a single injection of 1 c.c. of procaine penicillin G in sesame oil preparation once every twenty-four hours. This is sufficient in the treatment of most infections encountered. If it is desired to give as much as from 900,000 to 1,200,000 units per day this can easily be accomplished by administering 1.5 or 2 c.c. of the material twice a day.

It has not been the practice at the Mayo Clinic to use procaine penicillin G in the treatment of severely ill patients suffering with life-endangering infections such as bacteremia and subacute bacterial endocarditis. Most of these patients received regular penicillin by the intravenous-drip method. On occasion, however, some patients have received penicillin by the drip method during the day only, and 2 c.c. of procaine penicillin G at bedtime. (Proc. Staff Meet., Mayo Clin., 8 Dec. '48 - W. E. Wellman and W. E. Herrell)

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Streptomycin in the Treatment of Pertussis: This study was undertaken to determine the effect of streptomycin in patients with uncomplicated pertussis.

In 1945, Bradford and Day found that streptomycin is an effective agent in the treatment of experimental infection produced in mice by fresh strains of Hemophilus pertussis.

Hegarty and associates tested the activity of streptomycin in vitro against strains of H. pertussis and found that it was both bacteriostatic and bactericidal to this organism.

A review of the literature at the time this study was started failed to reveal information on the effect of this agent against pertussis in human beings. It was for this reason that the pilot study involving 24 patients was undertaken. No attempt was made to compare this form of therapy with the use of human or rabbit hyperimmune serum.

Only patients having uncomplicated whooping cough in either the catarrhal or early paroxysmal stage of the disease were included in this study. The patients were assigned in rotation to one of three groups. Those in the first group received streptomycin by the aerosol route; those in the second group received it intramuscularly, and those in the third (control group) received the usual symptomatic whooping cough treatment of the Cook County Contagious Disease Hospital.

Before being assigned to a group, each patient was observed in the hospital for three days. Cough plates and blood counts were made, and the character, duration, and number of paroxysms were determined. A diagnosis of whooping cough was made only if the patient exhibited at least two of three diagnostic criteria: (1) positive cough plate; (2) a leucocytosis with a lymphocytosis; (3) typical paroxysms of coughing.

The patients were all observed in one ward. Nurses were assigned to this ward continuously. The nurses were specifically charged with the responsibility of recording the time of occurrence of each paroxysm as well as recording the number for each patient. They also noted whether or not emesis occurred and all other uncommon phenomena such as convulsions, epistaxis, cyanosis, and apnea. During the greater part of this study the nurses so assigned had no other duties. The usual nursing care was handled by other nurses in the ward. Upon completion of the three-day period of observation and upon having established a diagnosis of pertussis according to the above standards, therapy was started.

Group 1 patients received one gram of streptomycin dissolved in 8 c.c. of normal saline solution. One cubic centimeter of this solution was administered every 3 hours around the clock. The solution was nebulized by attaching a Vaponefrin Nebulizer to an oxygen tank, and administered via an infant-sized B.L.B. mask. The rate of flow of oxygen was from 4 to 6 L. per minute and the average period of time to administer an aerosol dose of streptomycin was from seven to ten minutes.

Group 2 patients also received one gram (one million units) of streptomycin daily, divided into eight equal doses given intramuscularly every 3 hours.

Black and Poncher have recently described an efficient and inexpensive mask which is being manufactured by the Vaponefrin Company. This would simplify the administration of aerosol therapy to the young infant.

Although this is a small series of cases, it was thought by the investigators and nurses who observed each patient daily that the patients who received streptomycin via aerosol did much better clinically than the other two groups, despite the fact that the children had to be awakened to receive the treatment. This awakening frequently initiated a paroxysm. For this reason, the figures on the number and severity of paroxysms during the period of treatment are not recorded in this report.

No toxic effects of the drug were noted with the exception of a transitory generalized morbiliform eruption which lasted two days in one patient who received streptomycin intramuscularly.

Since there had been no previous experience with streptomycin in whooping cough, the dosage of one gram a day and the length of treatment of one week was arbitrarily decided upon. From this pilot study, it is believed that there is sufficient evidence that streptomycin is of clinical benefit in the treatment of pertussis to justify more extended use. It also appears that the aerosol route of administration is the one of choice. One week of treatment appears to be sufficient in the average case.

The decrease in the number of paroxysms, the lessening of the severity of the paroxysms, the marked decrease in complications, and especially the clinical impression obtained by trained observers, all attest to the efficacy of therapy with streptomycin, especially when given by the aerosol route. (J. Pediat., Nov. '48 - H. Leichenger and A. Schultz)

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The New Joint Armed Forces Statistical Classification and Basic Diagnostic Nomenclature of Diseases and Injuries: There will be issued soon (see BuMed Circular Letter No. 49-4 on page 39) a Joint Armed Forces Statistical Classification and Basic Diagnostic Nomenclature of Diseases and Injuries which will replace the one now in use throughout the Navy. In the selection of titles for inclusion, the attempt has been made to provide for the specialized needs of each of the Services as well as the requirements common to all. This fact will explain the presence of some terms which might not be required for naval purposes alone.

With the issuance of this new list it seems appropriate to review the difference between a diagnostic nomenclature and a disease classification and to indicate some of the principles that have governed the preparation of the list.

A nomenclature, as defined in Webster's New International Dictionary, is "The whole vocabulary of names or technical terms which are appropriated to any particular branch of science." From this definition it is apparent that a diagnostic nomenclature should be an exhaustive list of terms which would provide names of a high degree of specificity for every established disease entity. Although the actual names used may often indicate the relationship of the specific entities to each other, they are not grouped. Each morbid condition has its own title and no two have the same title. The essence of a nomenclature is specificity.

A diagnostic classification is an arrangement of disease entities which permits the combination of like conditions into classes and groups to any extent that may be desired. A classification will not provide specific categories for each disease entity - the important ones may be given specific categories, and

less important ones of similar nature may be grouped together. Residual categories will, however, always be provided for conditions not specifically provided for elsewhere. A classification will have a place for every condition which may occur, with the less important conditions losing their specific identity by being thrown in with other different but related conditions. A classification may be designed to provide whatever degree of specificity is desired, and a well-constructed one will allow for different degrees of specificity for different purposes. For example, a good classification will allow ready access to information about cases of (1) lobar pneumonia, (2) all forms of pneumonia, (3) all forms of acute respiratory disease, or (4) all forms of respiratory disease in general. Thus, it is apparent that the essence of a classification lies in the grouping of disease conditions along some common axis or axes. The selection of the axis to be used will depend on the information desired, and in most classifications the axis will vary from place to place throughout its structure. For instance, although almost all disease can be classified in terms of etiology and anatomical site, an entire classification based on these factors would be of very limited usefulness. For some of the infectious diseases, epidemic types are of great interest, for tumors, histological types may be of major concern, and for some varieties of cardiovascular disease, the physiological abnormality is the important thing. All of these, as well as other lines of cleavage, will usually be used in any complete classification. Because of the need by the Armed Services for handling large amounts of data, an important requisite for any disease classification is that it be adaptable to use with the punch-card tabulating machine. This method does, however, impose a restriction on the amount of detail that can be preserved. It is perfectly possible to work out a classification which will preserve several of the axes mentioned above. An example is the excellent classification of heart disease of the New York Heart Association, which is designed to give a complete description of each case in terms of etiology, pathological anatomy, physiology, functional capacity, and therapeutic group. Although this classification is admirably suited for the cross-indexing of clinical records, its very completeness makes it unsuited for the punch-card method. It was not designed for this purpose. In designing a disease classification then, it is necessary to use only one or at most two axes at any given point.

The new Armed Services list partakes of the attributes of both a nomenclature and a classification. Concerning nomenclature, titles were included which will account for about 99 percent of the patients treated, while leaving full freedom for the remaining 1 percent or so to be recorded in terms not listed. For various reasons it would be inappropriate for the Armed Services to prepare an exhaustive medical nomenclature. In the first place such a compendium already exists in the Standard Nomenclature of Disease and Standard Nomenclature of Operations of the American Medical Association. This nomenclature has, however, been used as a guide to terminology, and the great majority of titles included in the new list are taken verbatim from it. Where departures have been made from this terminology, either its rules have been followed in the construction of titles, or the precept of some other authoritative source followed. An example of the latter is the terminology for pulmonary tuberculosis in which the recommendations of the National Tuberculosis Association have been adopted.

The classification used in the new list is based on the recently developed International Statistical Classification of Diseases, Injuries and Causes of Death which, as replacing the old International List of Causes of Death, has been adopted by most of the nations of the world, and which for the first time offers an opportunity for the development of morbidity statistics, as well as mortality statistics, on a basis of international comparability. Thus, in the future, Navy morbidity figures may be studied not only in conjunction with those of the U. S. Army and U. S. Air Force but with those of other military and civilian groups.

In the new list a major departure from old nomenclature is the grouping of all infective and parasitic diseases together into one class with several subgroups representing the various epidemiological and etiological types. It is considered appropriate that these conditions, so important in military populations, should lead the list (Class 1), and that they should all be grouped together. They include conditions listed in the old Navy nomenclature in Classes 8, 9, 10, 11, 12, 13, and 22. Furthermore, the arrangement in the old list results in the grouping of diseases which have little of importance in common. In class 22, for example, are the rickettsial diseases, malaria, and plague among others. Although these conditions have in common the fact that they are all transmissible by arthropods, they represent three entirely different problems both from clinical and epidemiological points of view. In the new list the rickettsial diseases and malaria each will form a distinct group, and plague, of course, will have its own title among the bacterial diseases.

The second class in the new list will comprise neoplastic conditions. These have been divided into three groups, malignant neoplasms, neoplastic conditions of lymphoid and hematopoietic tissues, and benign neoplasms. The leukemias, presently in class 1 (diseases of the blood), and Hodgkin's disease, now in class 14 (diseases of the lymphatic system) will be found in the second of the above groups. The leukemias are further classified by cell type rather than simply as acute or chronic as in the old nomenclature.

Another example in the new list of what is believed to be a better arrangement of titles will be found in the diseases of the circulatory system. Here, separate groups are provided for active rheumatic fever, chronic rheumatic heart disease, and other diseases of the heart and circulatory system. No provision was made in the old nomenclature for the reporting of the etiology of chronic valvular disease, and it has been possible only to estimate the amount that was due to rheumatic fever. This important information will now be readily available.

It is believed that the new list will provide greater usefulness in the recording of clinical data, better reporting of diseases and injuries, and the development of more useful medical statistics in the Armed Services. (Medical Statistics Div., BuMed)

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List of Recent Reports Issued by Naval Medical Research Activities:

Naval Medical Research Institute, NNMC, Bethesda, Maryland

Project	Report No.	Date	Title
X-486	9	28 July '48	Appraisal of a New Pneumatic Balance Respirator, the M.S.A. "Pneophore"
NM 001 003 X-313	2	3 May '48	Physiological Resppnses to Hypoxia Induced in Man by Inspiration of a Low Oxygen-Nitrogen Mixture
NM 001 005 X-417	13	15 June '48	Effect of Ozone on Carbon Monoxide Uptake
NM 001 008	2	20 July '48	Fluorescence Spectra of Solid Materials Obtained by a Modification of the Beckman Spectrophotometer
NM 005 007	5	20 Sept. '48	Potential Vectors of Japanese Encephalitis in the Caroline Islands
NM 007 007 X-539	8	1 July '48	The Action of Antimalarial Drugs in Mosquitoes Infected with Plasmodium Gallinaceum
NM 007 024 X-759	4	2 July '48	Effect of Alloxan Diabetes on Susceptibility to Streptococcal and Pneumococcal Infection in Swiss Mice
NM 007 025	2	9 Aug. '48	The Effect of Artificial Surfaces on Blood Coagulability with Especial Reference to Polyethylene
NM 007 025	3	29 Nov. '48	The Uses of Plastic Tubes in the Reparative Surgery of Battle Injuries to Arteries with and without Intra-arterial Heparin Administration
NM 007 031	5	22 June '48	The Effect of Intestinal Irrigation on Blood Methanol
NM 007 031	6	23 June '48	The Effects of Various Substances on the Acute Toxicity and Blood Level of Methanol

Naval Medical Research Institute, NNMC, Bethesda, Maryland (Cont.)

Project	Report No.	Date	Title
NM 007 031	7	24 June '48	A Photoelectric Determination of Methanol in Biological Material
NM 007 039	9	9 June '48	A Species Variation in Prothrombin Determinations on Using Several Thromboplastic Agents
NM 007 039	10	8 Mar '48	The Clinical Manifestations of Acute Radiation Illness Produced in Goats by Exposure to an Atomic Bomb Test Able, Bikini, 1946, with Comments on Therapy
NM 007 039	12	28 July '48	The Spontaneous Leukocyte and Temperature Variation in Untreated Rabbits Studied under Controlled Conditions
NM 007 039	13	30 July '48	The Effect of Subcutaneous and Intravenous Injections of Adrenal Cortical Extract on the Peripheral Leukocyte Population and Body Temperature of Rabbits
NM 007 039	14	12 Aug. '48	A Method for the Simultaneous Exposure of Large Numbers of Animals to Single Dose High Intensity Total Body X-Ray Radiation
NM 007 039	15	17 Aug. '48	The Increased Tolerance of Mice to a Lethal Dose of X-Ray Radiation as a Result of Previous Sublethal Exposures
NM 007 039	17	27 Sept. '48	The Augmentation of the Pyrogenic and Leukocytic Effects of Typhoid Vaccine by Homologous Plasma in the Rabbit
NM 007 039	18	30 Sept. '48	The Failure of Folic Acid to Alter the Clinical Course and Hematologic Picture of Fatal Single Total Body Irradiation in Swine

Naval Medical Research Institute, NNMC, Bethesda, Maryland (Cont.)

Project	Report No.	Date	Title
NM 007 040	2	23 July '48	Plasma Amino Nitrogen Following Surgery
Field Note	-	23 June '48	A Convenient Source of Dry Ice for the Preservation of Virus Specimens on Field Trips

Naval Medical Research Institute, NNMC, Bethesda, Maryland and Naval Research Laboratory, Washington, D. C.

NM 004 001 NRL NR 172 121	-	13 Dec. '48	A Note on the Determination of Pressure Nodes in Liquids

Naval Medical Research Institute, NNMC, Bethesda, Maryland and The Department of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, D.C.

NM 013 002 X-420	3	22 June '48	Biological Studies of Antimony Compounds Containing Radioactive Isotopes. II. The Decomposition of Stibine In Vitro

Medical Research Laboratory, U. S. Naval Submarine Base, New London, Conn.

NM 000 009	1	21 July '48	Some Relations Between Vision and Audition
NM 000 009	2	10 Sept. '48	Standards for General Purpose Sun Glasses
NM 003 020	3	13 Aug. '48	Intensity Discrimination for White Noise

Medical Field Research Laboratory, Camp Lejeune, N.C.

NM 011 020	-	15 Dec. '48	Medical Evaluation of Standard U. S. Marine Corps Socks
NM 011 021 (Sub-Proj. 6-48)	-	30 Aug. '48	Automatic Ampule Injectors, "Ampins" Evaluation of
NM 011 021 (Sub-Proj. 7-48)	-	16 Sept. '48	Clamp Tourniquet, Evaluation of

Medical Field Research Laboratory, Camp Lejeune, N.C. (Cont.)

Project	Report No.	Date	Title
NM 011 021 (Sub-Proj. 12-48)	-	20 Dec. '48	Field and Laboratory Testing of Quinn Purifier
NM 005 030	-	30 Dec. '48	Larvae and Pupae of Mansonia Xanthogaster and Its Relation to Filariasis in South Pacific

U.S. Naval School of Aviation Medicine and Research, NAS, Pensacola, Fla.

X-720 (Av-376-s)	6	28 Jan. '48	A Study of the Physiological Changes which Occur During Acclimatization to High Altitude Subtitle: The Changes in Heart Size in Man During Partial Acclimatization to Simulated High Altitudes
NM 001 013 (X-720) (Av-376-s)	7	8 Sept. '48	Composition of Alveolar Air and Rate of Pulmonary Ventilation During Long Exposure to High Altitude
NM 001 017 (X-762) (Av-390-k)	3	7 Sept. '48	Review of Existing Data on the Incidence of Decompression Illness in Personnel at and Below 30,000 Feet
NM 001 019	2	2 June '48	Bundle Branch Block as a Temporary Phenomenon in Thyrotoxicosis, Report of a Case

Note: Those interested in seeing copies of the complete reports should address their request to the research activity from which the report originates.

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SECNAV LETTER 31 December 1948

To: All Ships and Stations

Subj: Charter of the Armed Services Medical Procurement Board

1. The Munitions Board in its meeting, 28 October 1948, approved the establishment of the Armed Services Medical Procurement Board under the following charter:

22 November 1948

CHARTER OF THE ARMED SERVICES MEDICAL PROCUREMENT BOARD

1. The Army-Navy Medical Procurement Agency is hereby reconstituted as the Armed Services Medical Procurement Board, with duties and responsibilities as hereinafter set forth relating to medicines and medical, surgical, hospital, dental, and veterinary supplies, hereinafter referred to as medical items.

2. The Armed Services Medical Procurement Board shall consist of the Surgeons General of the Army and the Navy and the Air Surgeon of the Air Force, or their respectively designated representatives.

3. The Armed Services Medical Procurement Board shall be responsible to the Secretaries of the Army, Navy, and Air Force for interservice planning and coordination of effort in the field of procurement of medical items and shall be responsible for making recommendations to, and performing such services, duties, and functions in medical matters as may be required of it by, the Munitions Board, the Research and Development Board, and the Joint Chiefs of Staff, as they exercise their respective statutory and delegated functions for the Secretary of Defense.

4. The Board shall select a chairman from among its members who shall serve for a term of 2 years unless relieved of duty. The chairman shall sign correspondence, reports, decisions, and orders for and in the name of the Armed Services Medical Procurement Board, and in general conduct the business of the Board and perform such other duties as may be determined by the Board.

5. The Armed Services Medical Procurement Board shall be responsible for its own internal administration, including supervision of its personnel, control of its records, space, and facilities, and determination of its budget, staff, space, and facility requirements, which shall be met by the Departments of the Army, Navy, and Air Force on such basis as may be agreed among them.

6. The Armed Services Medical Procurement Board shall have under its jurisdiction an Armed Services Medical Procurement Agency with duties and responsibilities as hereinafter set forth relating to the procurement of medical items.

7. The Agency shall consist of such officers and civilian employees as may be determined necessary by the Armed Services Medical Procurement Board, and the budgetary, staff, space, and facilities requirements of the Agency shall be met by the Departments of the Army, Navy, and Air Force on such basis as may be agreed upon among them.

8. The Armed Services Medical Procurement Board shall select from one of the three services an officer to serve as Commanding Officer of the Agency, who shall serve for a term of 2 years unless relieved of duty at the discretion of the Board. There will likewise, and similarly, be selected a Deputy Commander from a Department other than that of the Commanding Officer. The Commanding Officer, under the direction of the Board, shall supervise the personnel, records, and facilities; sign and execute for and in the name of the Agency correspondence, reports, decisions, contracts, and orders, and all other necessary papers; and shall in general conduct the business of the Agency as 'head of a procuring activity' and perform such other services as may be assigned to the Agency by the Board. The authority of the Commanding Officer may be delegated to personnel of the Agency.

9. The Armed Services Medical Procurement Agency, within the limits of allot-

ments of appropriations made available for such purposes by each of the Departments of the Army, Navy, and Air Force, and in accordance with the requirements established by the Departments, shall have the following responsibilities:

a. Procure medical items (in accordance with the consolidated requirements of the three Departments) by means of formal advertising or negotiation, in accordance with the requirements of sections II and III of the Armed Services Procurement Regulations respectively;

b. Supervise the administration and performance of contracts, and for this purpose shall arrange for inspection and audits, utilizing such facilities and services of the Departments as may be made available therefor:

c. Consolidate transportation requirements and arrange for delivery to storage or to installations through the appropriate office of the Departments involved in transportation but without having any responsibility for operational control of transportation facilities;

d. Within the policies and procedures of the Munitions Board Cataloging Agency, catalog medical supplies and equipment for the armed services;

e. Within the policies and procedures of the Munitions Board Standards Agency, prepare specifications for the medical items for the armed services;

f. Perform developmental engineering in connection with medical items for the armed services;

g. Supervise the operation of the Joint Medical Technical Maintenance Course;

h. Within the policies of the Munitions Board, formulate plans for industrial mobilization and procurement in the event of mobilization as prescribed by the three Departments; and

i. Perform such other functions as may be assigned by the Armed Services Medical Procurement Board.

10. All procurement by the Agency shall be effected in accordance with the requirements of the Armed Services Procurement Regulation and the procedures prescribed by the Department of the Army. However, the Agency is a joint agency of the Departments of the Army, Navy, and Air Force for the central procurement of medical items, notwithstanding the fact that, for the purposes of this regulation and procedures thereunder, the Agency shall be considered a procuring activity of the Department of the Army.

11. The Armed Services Medical Procurement Agency shall utilize the procedures and forms prescribed by the Armed Services Procurement Regulations.

—Gordon Gray,	*—W. John Kenney,*	*—Eugene M. Zuckert,*
The Assistant Secretary of the Army	*Under Secretary of the Navy*	*for the Under Secretary of the Air Force*

2. In accordance with paragraph 6 of the above Charter, effective 1 January 1949, the Army-Navy Medical Procurement Office is redesignated as the Armed Services Medical Procurement Agency with duties and responsibilities as set forth in the charter, with location at 84 Sands Street, Brooklyn 1, New York.—*SecNav. W. John Kenney.*

BUPERS CIRCULAR LETTER 48-242 29 December 1948

To: All Ships and Stations

Subj: Physical Fitness

(Ref.: (a) BuPers Circ. Ltr. 276-46; AS&SL July-Dec. 1946, 46-2236, p. 352.
(b) SecNav ltr. P2-5, of 27 May 1946; AS&SL Jan.–June 1946, 46–1076, p. 145.)

1. It is considered advisable to bring to the attention of personnel in the naval service the need for increased effort in acquiring and maintaining a satisfactory state of physical fitness.

2. Through Bureau-sponsored competitions in the major sports large numbers of officers and men are now engaging in athletic games designed to improve their physical well-being. This active program, while tending to encourage individuals generally to give consideration to their own physical condition, requires additional impetus to be more fully effective.

3. To this end it is requested that flag and commanding officers inaugurate a vigorous campaign emphasizing the importance of physical fitness to both the individual and the Navy, and stressing the fact that physical fitness is a matter of "individual responsibility." Officers and men must, through personalized effort and self-discipline, include some form of exercise in their daily routine in order that they may attain a state of physical fitness commensurate with that expected of military personnel. By encouraging the utilization of available athletic facilities, both afloat and ashore, and by granting more off-duty time to personnel for this purpose, as operating schedules and work loads permit, higher standards can and will be achieved.

4. It is felt that the successful prosecution of a physical-fitness program lies with the commanding officer, since he is cognizant of the problems affecting his command and can best initiate corrective measures should it become apparent that they are needed.

5. The attention of all commands is again invited to the physical-fitness program of the U. S. naval service, as set forth in references (a) and (b).—*BuPers. T. L. Sprague.*

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BUMED CIRCULAR LETTER 49-2 11 January 1949

To: All Holders of the Manual of the Medical Department

Subj: Advance Change 3-7, MMD.

Encl: 1. (HW) Subject Change

1. The enclosed Advance Change 3-7 is effective immediately. It shall be recorded on the "Record of Changes" page in the Manual. The individual paragraph changes are to be inserted in their proper places in the Manual text. At a later date, these changes will be incorporated in printed page change 3. --BuMed. H. L. Pugh

Note: Enclosure consists of 18 pages.

BUMED CIRCULAR LETTER 49-3 12 January 1949

To: All Medical Officers in Command, Senior Medical Officers, and Senior Dental Officers

Subj: Contributions to U. S. Naval Medical Bulletin

1. Medical Officers in Command, Senior Medical Officers, and Senior Dental Officers are urged to stimulate the interest of all officers of the Medical Department in the preparation of articles of professional interest for submission to the U. S. Naval Medical Bulletin for publication. Consultants to U. S. Naval Hospitals are also to be invited to participate.

2. Early and effective action in this matter is requested. --BuMed. H. L. Pugh

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BUMED CIRCULAR LETTER 49-4 12 January 1949

To: All Ships and Stations

Subj: Diagnostic Nomenclature for Medical Department

1. In June 1948 the Secretary of Defense directed the preparation of a uniform classification and nomenclature of diseases, injuries, and conditions for joint use by the Armed Forces. Through the combined efforts of the three medical departments a list of diagnoses and a list of surgical operations have been completed and have been approved by the Surgeons General of the Army and Navy, and the Air Surgeon.

2. The diagnosis list comprises both an abridged diagnostic nomenclature and a classification of diseases and injuries. The list includes slightly more diagnostic terms than the present Navy nomenclature, but still must be considered an abridged nomenclature, with provision as before for the use of terms ("xy" diagnoses) not included in the list. The Standard Nomenclature of the American Medical Association was used as a guide in selecting the terms to be included, though deviations were occasionally made. Similarly the arrangement of the titles into a classified list was based on the International Statistical Classification of Diseases, Injuries, and Causes of Death, with such minor modifications as appeared essential for the needs of the Armed Services. The new list is considered an improvement over the nomenclatures now used by the various services, and will in addition facilitate cross hospitalization of Service patients as well as provide for ready comparability of medical statistics of the three services with each other and with other agencies in this country and abroad.

3. It is anticipated that printing and distribution of the new lists will require about three months. Further information and instructions will be published prior to the date the new lists go into effect. --BuMed. C. A. Swanson

BUMED CIRCULAR LETTER 49-5 17 January 1949

To: All Ships and Stations

Subj: BuMed All Ships and Stations Ltr; Cancellation of

Refs: (a) BuMed All Ships and Stations ltr 43-1747, page 496, Navy Department Bulletin, cumulative edition, 31 Dec 1943.
(b) Part III, Chapter I, Manual Medical Department.

1. Reference (a) is hereby cancelled. Current instructions relative to medical, dental, and hospital treatment of naval personnel by other than the Medical Department of the Navy are contained in reference (b). --BuMed. C.A. Swanson

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